WHAT IS CLAIMED IS:

1. An automatic gain control device in an orthogonal frequency division multiplexing system, comprising:

a variable gain amplifier for controlling a gain of an input signal;

5   an energy calculator for calculating an energy of the input signal;

a truncator for accumulating the calculated energies, finding an average thereof, and generating a DC offset of the input signal;

a subtracter for subtracting a predefined reference value from the DC offset, and outputting a signal; and

10   an RC filter for feeding the value output by the subtracter back to the variable gain amplifier so that the value output by the subtracter may be used for an automatic gain control.

2. The automatic gain control device of claim 1, wherein the predefined reference value includes a reference power generated based

15   on a saturation to RMS ratio for minimizing the bit error rate of the orthogonal frequency division multiplexing system.

3. The automatic gain control device of claim 1, wherein the saturation to RMS ratio includes 4.0σ.

4. The automatic gain control device of claim 1, wherein the

20   energy for the automatic gain control is calculated for a training symbol interval of the input signal.

5. The automatic gain control device of claim 1, wherein the energy calculator finds a summation of the square of the input signal, and outputs the same as energy.

6. The automatic gain control device of claim 1, further comprising:

an analog to digital converter for converting the input signal into a digital signal, and providing the digital signal to the energy calculator; and

a pulse density modulation signal generator provided between the subtracter and the RC filter and processing the signal output by the subtracter to be a pulse density modulation signal.

7. An automatic gain control method in an orthogonal frequency division multiplexing system, comprising:

(a) calculating an energy of an input signal;

(b) accumulating the calculated energies, finding an average thereof, and generating a DC offset of the input signal;

(c) subtracting a predefined reference value from the DC offset, and outputting a signal; and

(d) feeding the output signal back to another input signal to be provided after the above-noted input signal so that the output value may be used for an automatic gain control.

8. The automatic gain control method of claim 7, further

comprising:

(e) using a saturation to RMS ratio which minimizes the bit error rate of the orthogonal frequency division multiplexing system, and generating the reference power.

9. The automatic gain control method of claim 8, wherein (a) comprises: finding a summation of the square of the input signal and outputting the same as energy.